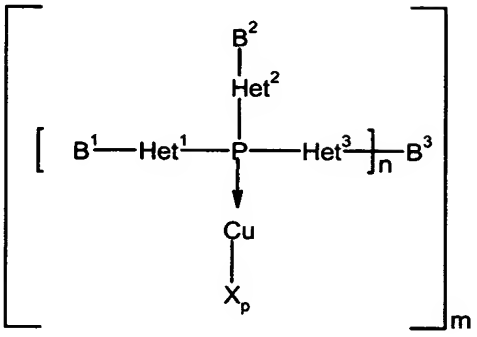
WHAT IS CLAIMED IS:

1. Compounds of the formula (I)



(I)

in which

Het^1, Het^2 and Het^3 are each independently absent, or are oxygen or NR^1 where R^1 is C_1-C_8-alkyl, C_5-C_{18}-aryl or C_6-C_{19}-arylalkyl and

B^1 and B^2 are each independently C_1-C_8-alkyl, C_5-C_{18}-aryl or C_6-C_{19}-arylalkyl, or the B^1 and B^2 radicals together are a divalent radical having a total of 2 to 40 carbon atoms and

B^3 is C_1-C_8-alkyl, C_5-C_{18}-aryl, C_6-C_{19}-arylalkyl or a radical having a total of 2 to 40 carbon atoms and the valency n,

X is halide, (C_1-C_8-haloalkyl)carboxylate, (C_1-C_8-alkyl)carboxylate, (C_1-C_8-haloalkyl)sulphonate, (C_5-C_{18}-aryl)sulphonate, cyanide, optionally fluorinated acetylacetonate, nitrate, oxinate, phosphate, carbonate, hexafluorophosphate, tetraphenylborate, tetrakis-(pentafluorophenyl)borate or tetrafluoroborate, and

p is 0, 1 or 2 and

n is 1, 2 or 3 and

m is 1, 2 , 3, 4, 5 or 6.

2. Compounds according to Claim 1, characterized in that Het^1, Het^2 and Het^3 are each independently oxygen or are absent.

3. Compounds according to Claim 1, characterized in that B^1 and B^2 are each independently secondary C_3-C_8-alkyl or tertiary C_4-C_8-alkyl, C_5-C_{18}-aryl or bis(C_5-C_{18}-aryl), or B^1 and B^2 together are a divalent radical which is selected from the group of 1,2-phenylene, 1,3-phenylene, 1,2-cyclohexyl, 1,1'-ferrocenyl, 1,2-ferrocenyl, 2,2'-(1,1'-binaphthyl) and 1,1'-biphenyl, and the radicals mentioned which are optionally mono- or polysubstituted by cyano, chlorine, fluorine, C_1-C_{12}-alkyl, C_1-C_{12}-haloalkyl, C_1-C_{12}-alkoxy, C_1-C_{12}-haloalkoxy, di(C_1-C_8-alkyl)amino or tri(C_1-C_8-alkyl)siloxyl.

4. Compounds according to Claim 1, characterized in that B^3 is secondary C_3-C_8-alkyl, tertiary C_4-C_8-alkyl, C_5-C_{18}-aryl, C_6-C_{19}-arylalkyl or a radical having a total of from 2 to 40 carbon atoms and the valency n.

5. Compounds according to Claim 1, characterized in that x is chloride, bromide, iodide, trifluoromethanesulphonate, trifluoroacetate, methanesulphonate, benzenesulphonate, cyanide, optionally fluorinated acetylacetonate, hexafluorophosphate or tetrafluoroborate.

6. Compounds according to Claim 1, characterized in that n is 1 or 2 and m is 1 or 2.

7. Compounds according to Claim 1, characterized in that they contain the following phosphorus compounds as ligands selected from the group consisting of: bis(2-dicyclohexylphosphino)-2'-(N,N-dimethylamino)biphenyl, 2-(dicyclohexylphosphino)biphenyl, 2-(dicyclohexylphosphino)-2'-methylbiphenyl, 2-(di-tert-butylphosphino)biphenyl, 2-(bisdiphenylphosphino)binaphthyl, 2-(di-tert-butylphosphino)biphenyl, 2-(dicyclohexylphosphino)biphenyl, 1,1'-biphenyl-2-yl dicyclohexyl phosphonite, 1,1'-biphenyl-2-yl di-tert-butyl phosphonite, 3-[(diisopropylphosphino)oxy]phenyl diisopropyl phosphonite, 3-[(di-tert-butylphosphino)oxy]phenyl di-tert-butyl phosphonite, 3-[(diphenylphosphino)oxy]phenyl diphenyl phosphonite, 3-[(dicyclohexylphosphino)oxy]phenyl dicyclohexyl phosphonite, 1,1´-binaphthyl-2,2´-diyl isopropyl phosphite and 2,4,8,10-tetra-tert-butyl-6-phenoxy-12H-dibenzo[d,g][1,3,2]dioxaphosphocine.

8. The compounds of formula (I) as recited in Claim 1 comprising [(μ-Br)$_2${2-(di-tert-butylphosphino)biphenyl}$_2$Cu$_2$], [(μ-Br)$_2${2-(di-tert-butylphosphino)biphenyl}$_2$Cu$_2$], [(μ-trifluoromethanesulphonato)$_2${2-(di-tert-butylphosphino)biphenyl}$_2$Cu$_2$], [(μ-Br)$_2${2-(dicyclohexylphosphino)biphenyl}$_2$Cu$_2$], [(μ-trifluoromethanesulphonato)$_2${2-(dicyclohexylphosphino)biphenyl}$_2$Cu$_2$] and [(μ-Br)$_2${1,1´-binaphthyl-2,2´-diyl isopropyl phosphite)$_2$Cu$_2$].

9. A process for forming carbon-nitrogen, carbon-oxygen and carbon-sulphur bonds, and also for preparing arylalkines comprising

catalyzing the formation or preparation with compounds according to Claim 1.

10. Catalysts comprising compounds according to Claim 1.

11. Process for preparing compounds of the formula (IV)

$$Ar\text{-}(F\text{-}R^2)_n \qquad (IV)$$

in which

n is 1, 2 or 3 and

Ar is a substituted or unsubstituted aromatic radical and

F is oxygen, sulphur, NR^3, NR^3CO or ethyndiyl, where R^3 is hydrogen, C_1-C_{12}-alkyl, C_5-C_{18}-aryl or C_6-C_{19}-arylalkyl and

R^2 is Ar, C_1-C_{12}-alkyl, C_1-C_{12}-haloalkyl, C_2-C_{12}-alkenyl or C_6-C_{19}-arylalkyl,

comprising reacting compounds of the formula (V)

$$Ar\text{-}Z \qquad (V)$$

in which

Ar is as defined above and

Z is chlorine, bromine, iodine, a diazonium salt or sulphonate

with compounds of the formula (VI)

$$H\text{-}F\text{-}R^2 \qquad (VI)$$

in which

F and R^2 are each as defined above and

in the presence of base and compounds according to Claim 1.

12. Process according to Claim 11, characterized in that the compounds according to Claim 1 are used as isolated compounds or generated in situ.

13. Process according to Claim 11, characterized in that Ar is carbocyclic aromatic radicals having 6 to 24 framework carbon atoms or heteroaromatic radicals having 5 to 24 framework atoms of which no, one, two or three framework atoms per cycle, but at least one framework atom in the entire molecule, are heteroatoms which are selected from the group of nitrogen, sulphur and oxygen, and the carbocyclic aromatic radicals or the heteroaromatic radicals which are optionally substituted by up to five identical or different substituents per cycle which are selected from the group of hydroxyl, chlorine, fluorine, nitro, cyano, free or protected formyl, C_1-C_{12}-alkyl, C_5-C_{14}-aryl, C_6-C_{15}-arylalkyl, -PO-[(C_1-C_8)-alkyl]$_2$, -PO-[(C_5-C_{14})-aryl]$_2$, -PO-[(C_1-C_8)-alkyl)(C_5-C_{14})aryl)], tri(C_1-C_8-alkyl)siloxyl or radicals of the formula (VIIa-f)

A-B-D-E	(VIIa)	A-E	(VIIb)
$A\text{-}SO_2\text{-}E$	(VIIc)	$A\text{-}B\text{-}SO_2R^4$	(VIId)

$A\text{-}SO_3W$ (VIIe) A-COW (VIIf)

in which, each independently,

A is absent or is a C_1-C_8-alkylene radical and

B is absent or is oxygen, sulphur or NR^4,

where R^4 is hydrogen, C_1-C_8-alkyl, C_6-C_{15}-arylalkyl or C_5-C_{14}-aryl and

D is a carbonyl group and

E is R^5, OR^5, NHR^6 or $N(R^6)_2$,

where R^5 is C_1-C_8-alkyl, C_6-C_{15}-arylalkyl, C_1-C_8-haloalkyl or C_5-C_{14}-aryl and

R^6 is in each case independently C_1-C_8-alkyl, C_6-C_{15}-arylalkyl or C_5-C_{14}-aryl, or $N(R^6)_2$ together is a cyclic amino radical and

W is OH, NH_2 or OM where M is an alkali metal ion, half an equivalent of an alkaline earth metal ion, an ammonium ion or an organic ammonium ion.

14. Process according to Claim 11, characterized in that R^2 is Ar or C_1-C_{12}-alkyl.

15. Process according to Claim 11, characterized in that the compounds of the formula (I) are used in amounts of 0.02 mol% to 10 mol%, based on the compounds of the formula (IV) used.

16. Process according to Claim 11, characterized in that the base used is an alkali metal and/or alkaline earth metal carbonate, hydrogen-carbonate, alkoxide, phosphate, fluoride and/or hydroxide.

17. Process according to Claim 11, characterized in that the bases used are pretreated by grinding and/or drying.